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SWEET POTATO

A new look at an old crop with tremendous potential

Importance and nutritive value

Sweet potatoes give similar yields to potatoes and have much lower management requirements. They have efficient root systems which can tolerate drought or low soil fertility better than potatoes. Sweet potatoes are also not subject to any serious foliar diseases, which makes spraying unnecessary. Unlike Irish potatoes which produce tubers, the edible portion of the sweet potato is a true root. Sweet potatoes are highly nutritious, particularly orange-fleshed varieties which are rich in beta carotene, an essential precursor for vitamin A. This vitamin is often lacking in subsistence diets, leading to a variety of health disorders, including blindness.

Cultivars

The local sweet potato industry is based almost entirely on cultivars developed by VOPI (Vegetable and Ornamental Plant Institute) at Roodeplaat. While there is tremendous cultivar variation, the most popular SA cultivars, such as Blesbok, have red skin and cream flesh. Overseas there is a preference for orange fleshed cultivars. Some promising new cultivars have been developed by the University of Natal, for example Jewel, Dusi Gold and Tala Red, and these are available through Sunshine Seedlings.

Climate and soil

The sweet potato is a tropical plant which needs a frost-free growing season of 120-150 days. The optimum temperature for growth is between 21^0 C and 29^0 C. At temperatures below 10^0 C leaf-yellowing and die-back occur, while heavy frost kills vines overnight. Sandy to loamy soils are preferred. Heavy soils tend to produce more misshapen roots, and also induce more root rots. Good drainage to a depth of at least 500 mm is essential.

Planting and harvesting times

The effects of the climate, as well as the availability of planting material, largely determine the optimum planting time for any area.

In frost-free areas, Sweet potatoes can be planted throughout the year, although plantings made from April to July are not recommended. The usual planting time is from January to March for a July to November harvest, when prices are normally high. If planted from August to December, the crop is marketed between January to May.

In areas receiving light frost, Planting can commence as early as October, if planting material is available. Such crops are generally harvested from February onwards. Plantings made in November/December are ready for lifting in about April, but many producers wait until the aerial growth has been killed by frost before lifting. Plantings made in January and February develop only small roots before growth is killed by frost.

In areas receiving heavy frost, Plantings should be completed in November, otherwise the season is too short and yields too low. The normal harvesting season is April/May.

Establishment

Sweet potatoes are usually propagated by means of 300 mm to 400 mm long vine cuttings. These can be terminal or sub-terminal cuttings. Terminal cuttings tend to give a slightly higher yield.

Short pieces of vine with at least two nodes can be rooted in seedling trays. Within three weeks these are fully rooted and can be planted like an ordinary seedling.

A new locally bred cultivar "Dusi Gold"

It is essential that only healthy propagating material be used. The plant is very susceptible to virus diseases, which seriously affect growth and yield. The spread of viruses is usually more rapid in the hotter growing areas. Growers may use their own cuttings from plants for a season or two, but should obtain fresh virus-free material, on an annual basis, to ensure that plantings remain healthy. Cuttings should never be taken from volunteers in old harvested lands, because these cuttings generally develop from small, unmarketable roots not collected at harvest. Many of these may have remained small because of virus infection of the mother plant; one would thus be tending to select virus-infected material for planting. It would be preferable to take cuttings from an unharvested, healthy-appearing field before it is harvested.

Plants should be established on flattened ridges. A ridge height of 300 mm on sandy soils, and about 400 mm on soils with a heavy texture, is recommended. The ridges are 800 to 1200 mm apart. The cuttings are normally spaced 300 mm apart on the ridges, but this spacing may vary from about 200 mm to 400 mm. Close spacings will reduce root size, and are especially important for cultivars that tend to form large roots, such as Tala Red. It is important to keep the cuttings moist while planting. Ensure that at least two buds protrude above the ground. Set the cuttings into moist soil, firm the soil around them, and irrigate immediately.

Fertilization

Any lime required should be applied at least a month before planting. Ideally fertilizer applications should be based on a recent soil analysis. However, on reasonably fertile soils, a pre-plant application of about 500 kg 2:3:4 (30) fertilizer mixture per hectare, followed by a side-dressing of 250 kg LAN per hectare at about 6 weeks, should give acceptable results.

Irrigation

The sweet potato is considered to be fairly drought-resistant crop, but good yields are possible only when adequate water is available throughout the growing season. If irrigation is available, it should be continued until 2 or 3 weeks before lifting, after which the soil should be allowed to dry out to prevent rotting of roots.

Weed control

Mechanical cultivation or hand-hoeing is practised while the crop is still young. If weeds are well controlled at this stage, the vigorous vine growth will usually smother late-emerging weeds. EPTC (Eptam and EPTC) is registered on this crop for the control of yellow and purple nutsedge and annual grasses. It is applied pre-plant to a clean seed bed and incorporated immediately. Linuron (Afalon or Linex) is registered for the control of mainly broad-leafed weeds and some grasses. This herbicide should be applied at planting; a light irrigation after spraying ensures the chemical is washed off the leaves of vines which are exposed.

Pests

Root-knot nematodes can be a major pest. A heavy infestation can cause cracking of roots.

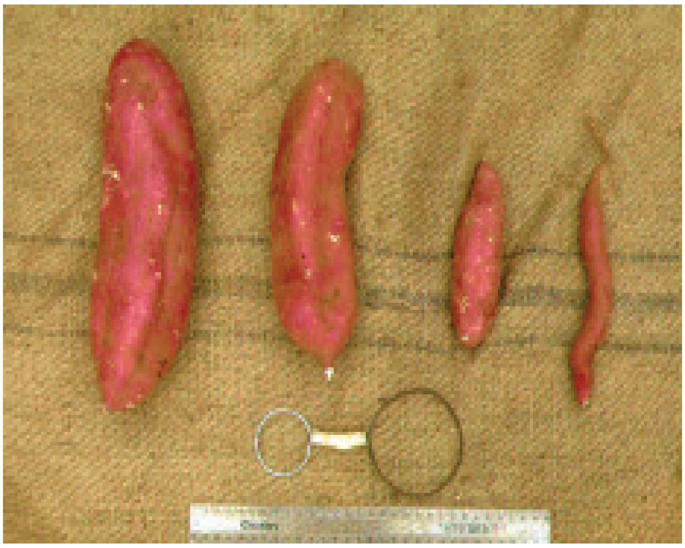
Diseases

Degeneration as a result of infection by viruses is the major problem in sweet potato production. The use of virus-free propagation material, and regular destruction of virus-infected plants, are normally sufficient to prevent yield losses. Post-harvest root rots can cause losses if wet conditions persist.

Harvesting

The crop may be harvested at any time, as soon as the roots are large enough, which is usually 140 to 150 days after planting. Fungal scurf can also be a severe problem if infected plant material is used. It can be largely controlled by sanitation and crop rotation. Here the vines are still green, they are cut off and removed, not earlier than 2 or 3 weeks before harvesting, to facilitate lifting of the roots. Such vines are sometimes used for cuttings for new plantings, but may also be utilised as stockfeed, because of their high nutritional value. Great care must be taken during lifting and handling, because the roots are easily damaged. Rot-causing organisms can enter the roots through such wounds, and cause serious losses during storage and marketing. Small plantings are usually lifted manually, using forks. On large plantings mechanical diggers are used. Provided the temperatures do not drop below about 10^0 C, the roots are left in small heaps in the land for up to 7 days, to allow them to dry, and for wounds inflicted during harvesting to callus. If freshly harvested roots are packed for marketing, rotting is more serious. The heaps are generally lightly covered with vines to prevent sun scald.

First grade sweet potatoes must be clean, well-formed, smooth and without blemishes, and weigh between 500 g and 1000 g each. The roots are marketed in various containers, first grade normally in cartons, whereas other grades are usually sold in bags or pockets.



Size grading of Blesbok roots

Yields (t/ha)

Typical yields (t/ha)are as follows:

Low	Average	Good
15 to 20	30	40 +

Virus-Free planting material is obtainable from the following sources:

ARC Roodeplaat	Tel:	012 - 8419611
	Fax:	012 - 8080844
Sunshine Seedlings	Tel:	033 - 3903047

For further information contact Rob Osborne: 033 3559197